



ALUPE UNIVERSITY
COLLEGE

... Bastion of Knowledge...

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OFFICE OF THE DEPUTY PRINCIPAL
ACADEMICS, STUDENT AFFAIRS AND RESEARCH

UNIVERSITY EXAMINATIONS

2021 /2022 ACADEMIC YEAR

FOURTH YEAR SECOND SEMESTER REGULAR EXAMINATION

FOR THE DEGREE OF BACHELOR OF SCIENCE (COMPUTER SCIENCE)

MAIN EXAMINATION

COURSE CODE: COM 426

COURSE TITLE: SIMULATION AND MODELING

DATE: 31ST MAY, 2022 TIME: 0900 – 1200 HRS

INSTRUCTION TO CANDIDATES

- a. SEE INSIDE

THIS PAPER CONSISTS OF 4 PRINTED PAGES

PLEASE TURN OVER

REGULAR EXAM

COM 426: SIMULATION AND MODELING

STREAM: COM

DURATION: 3 Hours

INSTRUCTION TO CANDIDATES

Answer **ALL** questions from section A and any **THREE** from section B.

SECTION A [24 MARKS] ANSWER ALL QUESTIONS.

QUESTION ONE [12 MARKS]

- a. Explain why differential equations are important when studying continuous systems simulation [2 marks]
- b. Outline the three main roles of graphical models in system modeling. [3 marks]
- c. **Explain** any TWO real world problems in business where simulation is applied and their solution methods. [4 marks]
- d. What are the main reasons of analyzing a system during system modeling? [3 marks]

QUESTION TWO [12 MARKS]

- a. What is system model? Discuss different system perspectives that can be represented in a model. [4 marks]
- b. Explain the meaning of Monte Carlo simulation pointing out its key characteristics, advantage and disadvantages. [4 marks]
- c. Explain model building, verification and model Validation as distinct processes. [4 marks]

SECTION B [36 MARKS] ANSWER ANY THREE QUESTIONS]

QUESTION THREE [12 MARKS]

- a. System is not a randomly arranged set. Explain. [2 marks]
- b. Explain why probability theory of interest to performance modeling of information systems? [2 marks]
- c. Discuss any two Important features (or concepts) of a business system. [4 marks]
- d. Discuss various classification of mathematical models [4 marks]

iii. On average, how many requests are in the system

[2 marks]

iv. What is the average time a request spends in the queue?

[2 marks]
